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Brain Drain Among Nepalese Health Professionals: Causes, Consequences, and Potential Solutions

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Abstract: This study comprehensively analyses the brain drain phenomenon among Nepalese health professionals, addressing its historical context, underlying causes, and potential solutions. The paper identifies the gaps in existing literature by examining the global migration of highly educated individuals from developing to developed countries. It seeks to offer a detailed understanding of this complex issue. The primary objective of this study was to explore the impact of brain drain on the healthcare industry, considering its implications for both source and destination countries. Through an in-depth literature review, the paper presents key findings related to the various forms of brain drain, including organisational, industrial, and geographic, and their consequences for healthcare delivery. Furthermore, the paper focuses on recent studies that challenge the traditional perspective on the causes of the shortage of educated workers in developing nations, offering a more contentious viewpoint. The paper emphasises the need for targeted interventions and policy measures to address the challenges posed by brain drain while also recognising the fundamental right of migrant healthcare workers to seek improved opportunities for themselves and their families.

Keywords: *Nepal, Brain drain, Health professionals, Migration, Healthcare industry*

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1. Introduction

The phrase "brain drain" describes the migration of workers from various parts of the world in search of an improved level of livelihood and living conditions, greater earnings, access to advanced technology, a chance to work in a better resource system, and secure political conditions in diverse places worldwide (Kadel et al., 2019). It is recognised as the global movement of resources through human capital. It applies to migrating highly educated individuals from developing to developed countries (Chimenya et al, 2015).

Brain Drain, specifically, means the "human capital flight," a process where the large-scale exodus of knowledgeable, talented, and competent people migrates from less developed to more developed countries (Kimani, 2009). This problem has a long history. In the 1960s, intellectuals, including scientists and engineers, emigrated to the United States from the United Kingdom; therefore, the phrase "Brain Drain" emerged (Docquier & Rapoport, 2008; Mishra, 2023). In the context of Health professionals, brain drain refers to the migration of health professionals for improved living and quality of life, more income, access to cutting-edge technologies, and more stable political environments. The movement of health professionals from developing to industrialised nations has continued to be relevant for many years (Mishra, 2023).

One of the biggest challenges for health human resources is the brain-drain issue (Chen, 2004; Juni & Sallou, 2019). Regardless of the push and pull factors, the migration of healthcare workers from developing to developed countries has done more harm than good in healthcare delivery in various countries. Many highly educated and competent individuals have left their native nations throughout the 20th century for better jobs and social prospects elsewhere (Juni & Salloum, 2019).

The British Royal Society first used the term "brain drain" in the 1960s in response to the departure of highly qualified scientists, doctors, and university instructors from developing nations (William, Carrington & Enrica, 1999; Chiamaka et al., 2020). According to Chimenya & Qi (2015), brain drain is defined as the international movement of resources in the form of human capital, primarily involving the migration of highly educated and competent people from developing to wealthy countries. The term "brain drain" in the context of the healthcare industry refers to the migration of medical professionals abroad in quest of improved working conditions, more stable political environments, access to cutting-edge technologies, and a higher standard of living and quality of life (Kadel & Bhandari, 2018). However, the movement of highly trained labourers from poor to industrialised countries is an unavoidable aspect of globalisation and has advantages and disadvantages. Worldwide, there is a demand for qualified health workers, even though most migration is from developing to industrialised nations (Chiamaka et al., 2020).

However, the freedom to pursue a better life for themselves and their family is a fundamental entitlement for migrant healthcare workers. A problem known as "brain drain" has resulted from the decision of skilled professionals to leave their home nations for better work environments. "Brain drain" is defined by Atte (2021) as the loss or depletion of technical and intellectual workers. Brain drain is the term the UN uses to describe the one-way flow of highly skilled individuals from poor to wealthy nations. Even if millions of people worldwide continue to benefit from globalisation and the movement of health professionals, many more have been despondent due to these developments (Atte, 2021).

Organisational, industrial trial, and geographic brain drain are the three categories. Organisational brain drain is the term used to describe the departure of experts from one organisation to another, frequently due to unclear or uncomfortable working environments. An "industrial brain drain" phenomenon occurs when people leave one industry (mining, health care, or education) for another because the other can provide better pay or working conditions. The movement of professionals from one physical place to another, such as from one experiencing political unrest or economic hardship to another where there are more chances for professional advancement, security, or overall quality of life, is known as geographic brain drain (Shinwari et al., 2021).

Until recently, it was believed that the primary cause of the shortage of educated workers in developing or undeveloped nations was brain drain (Krasulja et al., 2016). However, recent studies offer a more contentious perspective. Brain drain may result in significant losses, but the fact that high-skill emigrants often leave some of their assets in their country of origin and send home remittances complements the remaining high and low-skill labour (Berry and Soligo, 1969).

According to Krasulja et al. (2016), migration of highly educated people also significantly lowers costs, benefiting the country of origin. After graduation, highly educated people cannot "monetise" their knowledge because of a lack of employment, corruption in the educational system, and exorbitant private school tuition, among other factors. In these conditions, the mismatch between supply and demand in the education sector may cause the developing nation's educational system to deteriorate. From a broader perspective, these studies emphasise the contribution of highly skilled migrants to knowledge and an international public good while disregarding “outdated” claims on alleged losses for developing countries (Docquier et al. 2011).

Shakya S (2022) stated, “Brain drain is an evident phenomenon in most developing and underdeveloped nations, but it has been at the forefront in Nepal for decades. Nepali young health professionals are ready to emigrate to other nations within a few years of their undergraduate medical education.” The alarming emigration trend and the brain drain issue worsen yearly. The highest percentage of Nepali health professionals migrate to the United States of America (USA) and the United Kingdom (UK) (Shankar, 2017).

According to a study done by Phuyel (2013), it appears that the brain drain of doctors from Nepal has had no appreciable adverse effects on health-related results and has even stated that there has been an adequate supply of doctors, given the high ratio of emigration, which might be attributed to enough production of doctors. However, a significant portion of government funding for medical education has been invested in or channelled by the Nepali government. If a doctor emigrates permanently, Nepal will suffer from various losses, including a direct investment and a loss of its societal value.

In recent years, Nepal has been facing newer issues in the healthcare sector, with emerging illnesses like Coronavirus disease 2019 – COVID-19 (Shakya, 2022). Although this has affected people worldwide, Nepal has seen a particularly noticeable impact because of the incompetence and immense pressure the country's health care system is under. Recently, inadequate laws and regulations concerning healthcare professionals, as well as a lack of public awareness, have posed a threat to workplace violence (Sapkota 2021). These issues have led to an alarming brain drain rate among Nepal's health professionals.

Although Brain Drain is a well-acknowledged area among researchers, surprisingly little is known about Nepal’s Brain Drain among healthcare professionals. This paper aims to explore the causes of brain drain in the context of the "push and pull factors" (Nair et al. 2013) that have been framed in numerous studies related to health professionals. It also seeks to

discuss the current concerns, their effects, and effective national initiatives addressing the migration of health professionals in the context of Nepal.

2. Materials and methods

The methodology for this review paper entailed a systematic and comprehensive approach to gathering pertinent literature and information on brain drain among Nepalese health professionals. The research question guiding this review was formulated as "What are the causes, consequences, and potential solutions to the brain drain among Nepalese health professionals?" This question was the foundation for systematically searching electronic databases, including PubMed, MEDLINE, Google Scholar, Scopus, Web of Science, PsycINFO, and CINAHL.

A combination of specific keywords and search terms was employed during the systematic review process to ensure thorough exploration of the topic. These keywords included "Brain Drain," "Health Professionals," "Brain Drain Nepal," " Health Professionals Migration," "Brain Drain Causes," "Brain Drain Consequences," "Brain Drain Solutions," "Human Capital Flight," "Healthcare Workforce Migration," "Brain Drain Developing Countries," and "Brain Drain Developed Countries." These keywords aimed to capture a wide range of relevant literature addressing the brain drain phenomenon among Nepalese health professionals. The co-occurrence analysis and 'all keywords' as a unit of analysis were chosen for data visualisation in VOSviewer, as shown in Figure 1.

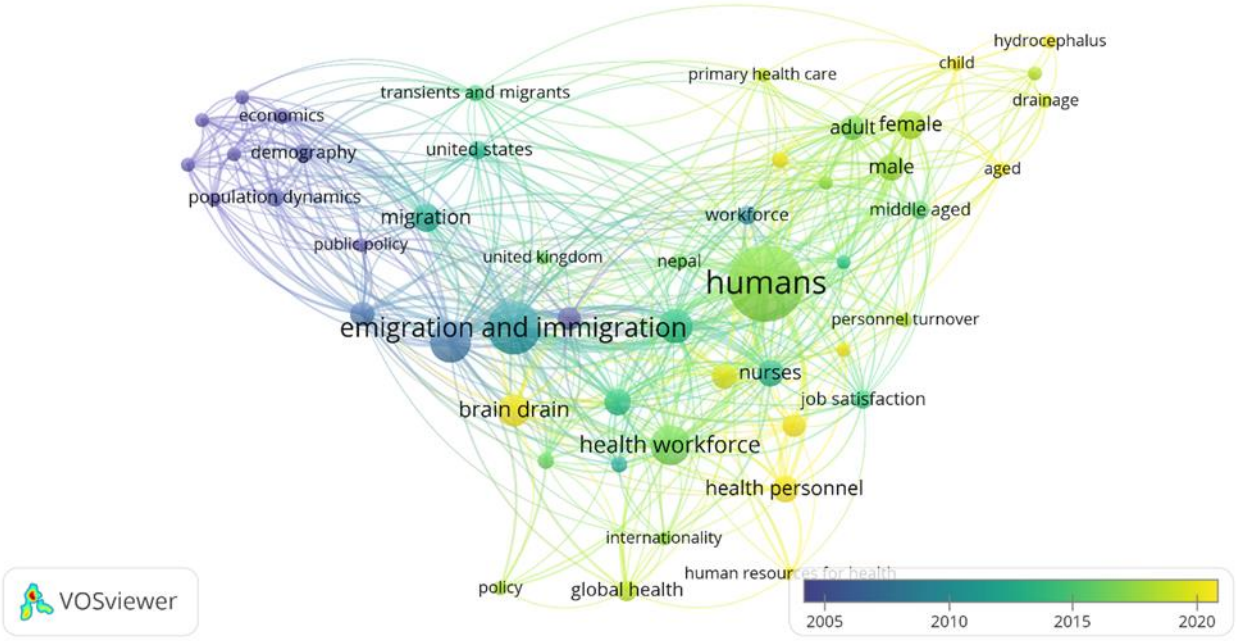

Figure 1: Co-occurrence analysis of bibliometric analysis related to brain drain

The chosen literature was ensured to focus on the brain drain among Nepalese health professionals and investigate the causes, consequences, and potential solutions to this phenomenon. It had to be published in English and be peer-reviewed journal articles or academic publications. Studies that did not meet these criteria, including those unrelated to the brain drain phenomenon or non-English publications, were excluded from the review. After proper review, 104 documents were analysed to write this paper. The screening and selection process involved systematically reviewing titles, abstracts, and full-text articles to identify and extract relevant data from the selected studies. The extracted data aimed to provide a comprehensive overview of the identified causes, consequences, and potential solutions to the brain drain among Nepalese health professionals.

A total of 218 articles were gathered from seven different databases. The title and abstract were initially screened, and 194 articles were available. Of these, 13 were excluded as they didn't fit the inclusion criteria. Altogether, 104 articles were finally included and analysed in this study. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow chart illustrating the study selection process is shown in Figure 2.

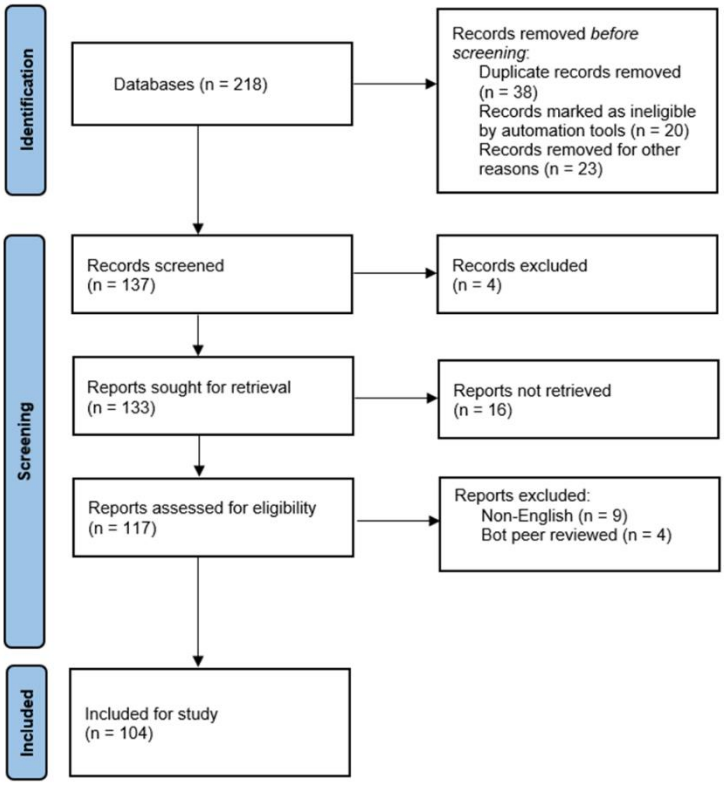

Figure 2: PRISMA diagram for the process of the article selection (Adapted from Page et al., 2021)

3. Results and discussion

3.1. Healthcare system in Nepal

Nepal's transition to a federal government structure has resulted in significant reforms in the health sector. Nepal was a centralised kingdom until 2008, when it became a republic from 2008 to 2015 and a federal republic from 2015 to the present (Sapkota et al., 2023). Nepal's political system was reorganised in 2015 by adopting a new constitution establishing a federal republic with three levels of autonomous government: federal, provincial, and local/municipal. According to this constitution, everyone has the right to free primary healthcare, no one should be denied access to emergency medical treatment, and health is a fundamental human right. Primary health care services are provided by the 753 local governments, which include both rural and urban towns. The establishment of national standards and regulatory frameworks, the provision of funding, the creation of national hospitals, and the provision of specialised healthcare are all still under the federal government's purview. Essential hospital services must be provided, and coordination with the local and federal governments is the responsibility of the seven provincial governments (Wasti et al., 2023).

The new constitution effectively shifts power towards a more decentralised system by giving the new provincial governments primary responsibility for providing health services. Provincial governments are taking charge of providing healthcare services and are enacting their health policies, although there is still considerable uncertainty over mandates and reporting channels. For several reasons, several other nations have already decentralised their health systems. Decentralisation was often implemented to increase system agility or bring decision-making closer to the people, enabling better response to local demands. In other instances, the goal was to boost productivity and enable better resource management. Decentralisation initiatives of this kind have frequently been encouraged and sponsored by international organisations and donor agencies, including entities like the World Bank. Since the projected benefits for the health sector itself were not the primary driver of change, the decentralisation process of Nepal's health system demands special attention. Instead, the decentralisation of the health sector emerged because of a more extensive constitutional reform initiative following the nation's civil war (1996–2006). Instead of being implemented to improve the health system, the country's health system had to react and adapt to political decisions, such as shifting to a federal state and establishing new provincial governments. Some have claimed that federalisation can be challenging in a nation with limited resources, conflicting political ideologies, weak institutions, and poor governance (Rushton et al., 2021).

The Nepalese Doctors Association UK estimates around 300 doctors, while there are no exact estimates of nurses from Nepal currently working in the UK (Sapkota et al., 2014). Around 892 Nepali doctors acquired the eligibility certificate to pursue postgraduate degrees abroad in fiscal year (FY) 2013–14 and FY 2014–15 for China, the Philippines, India, and

Bangladesh. As NNC holds poor records of the actual number of nurses who leave the country, 724 in 2013-14,500 nurses in 2014-15 had applied for the letter of good standing abroad, which increased from 115 in 2001-02.(Almeida et al., 2016)Around 9 percent of Nepalese doctors flew abroad in 2004; out of 125 total,80 went to the USA, 30 went to the UK, and the remaining 15 went to other countries (Phuyel & Hiwatari, 2013) The numbers of NMC registered doctors with Good standing certificates in 2020,2021,2022 are 1087,1502 and 2189, respectively (Nepal Medical Council, 2022). As per NNC, 3461 nurses went abroad between 2002 and 2011. In 2013, the number reached 4155 in two years (Baral, 2015).

Health workers' reports from Nepal indicate that the federalisation process has advantages and disadvantages for addressing major health issues and achieving universal health coverage. According to these assessments, the health care system is now more adaptable and responsive due to federalisation, allowing it to consider the community's needs and change as necessary. Local governments might make investments, modify policies, and hire staff more readily without central government monitoring. They also propose an unequal and divided system, though. Conflicting policies at different levels lead to ambiguity. Local governments with few resources cannot care for their inhabitants. Regional leadership's qualifications and dedication to promoting health vary greatly. These sophisticated and conflicting assessments indicate that considerable consideration should be given to ensuring the Nepalese healthcare system can optimise federalism's benefits while mitigating its drawbacks (Chen et al., 2023).

However, there have been structural and operational problems with the transition from a highly centralised health system to a more decentralised model under federalism. These problems include the weakening of the infrastructure, a lack of skilled staff, absenteeism among health workers, poor accountability, delays in procurement, and a lack of coordination. Furthermore, there has been a misunderstanding regarding the directives, functions, and accountability of various levels of government and the channels of communication between them (Chen et al., 2023).

3.2. Causes of brain drain among health professionals

Many developing nations have underfunded health systems, poor medical supplies and equipment, poor physical infrastructures, a lack of incentives and training opportunities, and a discriminatory work atmosphere (Sapkota et al., 2014). A higher unemployment rate in the health sector, new technology like electronic recruitment of health personnel, and a deplorable health care system are the other reasons for the migration of health workers (Misau et al., 2010). The emigration of doctors can be explained by external(pull) factors like the availability of professional training, higher salaries, and better lifestyles. However, internal (push) factors like lack of facilities, lower wages, infrastructure, and unemployment contribute to further migration (Adkoli, 2006). Many factors, such as financial, political, professional, and personal, contribute to the motivation for nurse migration. In Nepal, fewer jobs and political instability are the leading causes of the emigration of the skilled workforce (Thapa & Shrestha, 2017). Hectic and overcrowded working places, unpredictability, and exposure to potentially traumatic situations are the causes of burnout in emergency nurses (Adriaenssens et al., 2015). Recipient nations offer higher salaries (sometimes 24 times that of the low-income nations) with safer environments and intellectual stimulation. (Lofters, 2012) The inability to maintain work-life balance (WLB)by general practitioners was also associated with burnout and poor motivation (Bodendieck et al., 2022) The myriad possibilities for a better and safer working environment, income, infrastructure, and political freedom and liberty may drive individual decisions to immigrate to countries like the USA, the United Kingdom, and Canada. (Mackey & Liang, 2012). The government’s inaction on improving the service of health care providers, the influence of family and friends, and career advancements have led to the most migration of health workers in Ghana (Adjei-Mensah, 2023). Most people, however, believe that the poor economy of developing countries plays a critical role in the migration of health workers (Okeke, 2013).

3.3. Impacts of brain drain among health professionals

Talented people may remain in high-income countries (HICs) due to the higher opportunities and rewards while pursuing more education and skill advancement. Additionally, HICs depend on foreign medical graduates who are immigrants to supplement their physician workforces (El Saghir et al., 2020).

Further migrant waves have been driven by the political, social, and economic instability in many low-income countries (LMICs), adding to the pressure on already overburdened health systems in these regions. Health systems have been placed at risk by the flow of medical professionals from low-income countries (LMICs) to high-income countries (HICs) and from the public to the commercial health sector (Frenk et al., 2022).

Several factors, such as ineffective resource distribution, a lack of healthcare experts, and poor recruitment in government institutions, cause this health staff crisis. The frequency with which attacks on healthcare providers have increased is concerning (Singh, 2023).

According to WHO estimates, there is a 2.8 million physician shortfall worldwide, with significant shortages particularly in low- and middle-income countries (LMIC). The movement of physicians from low-income countries (LMICs) to high-income countries (HICs) exacerbates the unequal distribution of doctors worldwide. Many adverse economic effects result from this large-scale migration, including increased mortality linked to a shortage of doctors in

low- and middle-income countries. There are significant economic repercussions when doctors relocate from low-income to high-income environments. These are caused by increased mortality linked to the loss of physicians and the simple migration of human capital (Saluja et al., 2020).

Governments and legislators striving to guarantee that the Sustainable Development Goals for Health (SDG3), which emphasise the need for equitable distribution of health services for all and universal and sustained access to health delivery by 2030, are increasingly concerned about the global shortage of health workers. Reaching these objectives and enhancing health results hinges on having a minimal number of doctors, nurses, midwives, and other health professionals in place to facilitate an efficient healthcare delivery system. Nonetheless, there are gaps and shortages of healthcare professionals worldwide, with many low- and lower-middle-income nations reporting high to severe shortages in this area where there is a critical need for healthcare professionals (Adovor et al., 2021).

A survey of the literature on brain drain revealed no universal agreement regarding the benefits and drawbacks for the general growth of the home countries, particularly regarding higher education. Numerous studies have revealed that brain drain negatively affects higher education and the economy of the country of origin. The negative consequences of brain drain are distributed equally across teaching, research, and graduate quality in higher education. The positive consequences of brain drain can increase the income and educational levels of emigrants' home countries. Brain drain benefits both the home and recipient countries (Mainali, 2019).

Brain drain is a severe problem in Nepal's higher education system, resulting in a significant loss of investment in higher education. Political unpredictability, a lack of employment or educational opportunities, and lower-than-competitive pay were the primary causes of brain drain. The impacts of brain drain on higher education in Nepal were more detrimental than beneficial. It is in the nation's best interest to make the most of brain drainers' knowledge and skills to develop Nepal's higher education system and economic prosperity, even in the face of more detrimental consequences. For the sake of the country's economy, the Nepali government does, however, work to slow down or even halt the rate of brain drain over the long term (Mainali, 2019).

To better serve its citizens and lessen the brain drain phenomenon, Nepal should enhance its living circumstances, infrastructure, research capacity, and educational endeavours (El Saghir et al., 2020). Global attention is required for this epidemic, as is national research assessing brain drain among medical workers. By addressing the root causes, tackling many issues, and promoting the welfare of medical professionals, Nepal may strive toward a long-term healthcare system that offers high-quality treatment to everybody and achieves its sustainable economic development goals.

Among the most migratory skilled occupations are those in medicine. Given the shortage of medical professionals in many developing nations, their migration could result in significant welfare losses. The World Health Organisation (WHO, 2020) reports that less than ten doctors are available per 10,000 people in more than 40% of WHO Member States, while less than 40 nurses and midwives are available per 10,000 people in more than 55%. There is a medical brain drain because empirical research indicates that the departure of physicians is linked to high rates of HIV-related deaths, child mortality, and a shortage of medical personnel to provide primary healthcare needs locally (Lanati & Thiele, 2021).

According to WHO forecasts, there will be a shortfall of 18 million health workers (HWs) by 2030, mostly in low— and middle-income countries (LMICs). The scarcity is made worse by the ongoing exodus of HWs from LMICs, frequently to higher-income nations (Ikhurionan et al., 2022).

Accordingly, Thapa & Shrestha (2017) conducted a descriptive cross-sectional survey among 228 Nepalese nurses employed in five different nations in 2016 and discovered that most were compelled to relocate overseas due to personal ambition, low pay, and a shortage of employment and career opportunities. If the underlying causes are not adequately addressed, it is likely that the number of nurses leaving Nepal will continue to rise.

In a similar vein, Poudel, Ramjan, Everett and Salamonson (2018) employed a mixed methods methodology to analyse 799 nursing students and discovered that while the majority (92.5%) stated some intention to move, the main reason given by three-quarters of these students was to pursue their studies overseas. Insufficient postgraduate education, low pay, unemployment, unfavourable working conditions, and a lack of professional autonomy in Nepal are reasons for their intention to migrate.

Similarly, research by Hashish & Ashour (2020) on 325 nurses employed at a university hospital in Egypt discovered that both pull and push factors could predict around 99.6% and 97.5% of the nurses' brain drain, respectively. Six of the seven themes from the qualitative content analysis fell into the "push-pull" category. Additionally, five sub-factors were identified as potential solutions for the "mitigating factors theme." The most critical factors influencing nurses' brain drain were related to the economy and the workplace.

In February and April of 2019, 711 fifth- and sixth-year medical students and 174 residents from two medical faculties in Egypt participated in a cross-sectional study led by Hashish & Ashour (2020). Tanta and Kafrelshiekh discovered that most participants (89.4%) wanted to leave the country and believed their salary was out of line with their working hours and risks. About half (52.8%) of the participants had part-time jobs in private hospitals. Just 4.9% of interviewees said they felt valued by the nation. 40.2% of participants expressed dissatisfaction with their relationship with coworkers, whereas 75.9% of participants expressed dissatisfaction with their interaction with patients. Of the participants, 55.5% reported verbal abuse, and 35.4% reported physical assaults. Residents generally showed less negative opinions toward jobs and professional concerns than students.

One hundred seven studies were included in the 21,593 unique records that Toyin-Thomas, Ikhurionan, Omoyibo, et al. (2023) viewed. Two-thirds of the included studies comprised data from numerous LMICs, and the remaining twenty-five were single-country research concentrating on 26 nations. Approximately 64.5% (69 of 107) and 54.2% (58 of 107) of the articles were about doctors or nurses. Leading destination countries were the United Kingdom (44.9%; 48 of 107) and the United States of America (42%; 45 of 107). India (12.1%) and the Philippines (6.5% (7 of 107) were the LMICs with the most studies, followed by South Africa (15.9% (17 of 107). Factors at the macro and meso levels were the main forces behind migration. Paying attention to security issues (58.9%) and compensation (83.2%) were the main macro-level factors influencing the migration/intention to migrate. In comparison, career prospects (81.3%), good working environment (63.6%) and job satisfaction (57.9%) were the major meso-level drivers.

Similar to this, Sussana's (2023) study involved a survey of 15,510 people who were unreachable and belonged to various kinds of health workers. Four hundred respondents from the Greater Accra Region of Ghana were sampled using stratification. According to the study, the majority of Ghana's best health workers are leaving the country for developed countries due to government inaction on issues about their working conditions, including low pay, few opportunities for staff development, lax equipment replacement policies, political interference at work, high living standards, subpar housing, and personal reasons.

In a study by Kadel & Bhandari (2019), ninety-nine nurses participated in a cross-sectional study that was carried out on staff nurses in particular hospitals in Biratnagar, Nepal, between February 2017 and February 2018. According to the survey, 78.8% of nurses were under 25. Of them, the majority (81.8%) had completed their PCL in nursing, and over half (55.6%) desired to go overseas to continue their education and career. Only 5.5% desired to migrate to the United Kingdom, with Australia (56.4%) and the USA (25.5%) ranking as the top migration destinations. The primary push and pull factors to induce brain drain among nurses were inadequate working conditions, low pay, and limited opportunities for professional advancement. Most nurses (96%) in this poll indicated dissatisfaction with their pay. Over 50% of nurses employed at private hospitals desire to relocate overseas. The main driving forces behind migration were low pay and limited job advancement opportunities.

According to Silwal (2019), a study including 160 expatriate respondents looked at the reasons behind the experts' departure from the country. It explored the connection between brain drain and Nepal's sending economy. Employing a descriptive, correlational, and causal-comparative research design, the study discovered that while education, employment, and skills are the primary reasons people leave their home countries, it is employment and skills that keep them there, both of which have a 5% significance level impact on the sending economy. Individuals receive better job offers and begin working overseas, and once they realise their skills have improved, their prospects of relocating abroad rise.

The patterns of migration of health professionals in the EMEs have resulted in two types of discrepancies between health needs and healthcare workers: (i) within country (rural–urban, public–private, or government healthcare sector–private sector); and (ii) across countries (south to north). Nair M. & Webster P. (2012) used a qualitative synthesis approach based on the "critical review" and realist review" approaches to the literature review. Migration is influenced by a number of factors, such as a lack of employment opportunities, wages and work environments that are appropriate in EMEs, the growing demand for migrant labour in high-income countries because of demographic shifts, and the medical education system in EMEs.

According to Mahindra and Dangi (2014), the inequities may negatively impact the social and economic fabric of these sending nations. This study aims to comprehend the causes of human capital flight and find both immediate and long-term solutions to address it. The study suggests ways to counteract brain drain by building good connections with the diasporas. This mutual benefit will result in the transfer of skills between the countries of origin and destination. Creating appropriate policies would guarantee the long-term correction of national disparities in human resources.

According to Toya et al. (2014), fifteen semi-structured interviews with six Nepalese physicians and nine nurses who had immigrated to the UK were part of a qualitative study. The snowballing technique was used to select respondents, and a thematic analysis was conducted to determine the main push factors mentioned. It was discovered that these included low pay and working conditions, political unpredictability, inadequate workplace security, a lack of recognition, a fear of being placed in remote or rural areas of Nepal, unemployment, corruption, and a lack of opportunities for skill development. Increasing access to the global labour market, greater compensation, opportunities, resources, and living standards were among the pull factors. Furthermore, psychosocial variables and "peer group influence" were significant concerns for Nepalese healthcare professionals relocating to the UK. It is suggested that the migration of health workers is a component of the broader global trend of growing migration and that the negative effects of this migration can only be minimised through managed migration, bilateral initiatives, and long-term policy.

Emigration of health workers has both short and long-term impacts on the sustenance of the developing countries (Misau et al., 2010). The migration of competent and skilled nurses results in a shortage of nurses in primary health care centres (PHC), district hospitals, and private hospitals. As a result, the excellent delivery of healthcare services is hampered (Kadel & Bhandari, 2018). There is maximum burnout among health professionals in Nepal, and it is saddening as the issue has not gotten enough attention yet, and we are losing lots of professionals every year. The exact data is not recorded per Adkoli's work (Pokhrel, 2017). As per the Ministry of Health and Population (MOHP, 2013), Nepal has 0.50 nurses per 1000 and 0.17 doctors per 1000/population, which is significantly less than the WHO (2013)

recommended 2.3 doctors, nurses, and midwives per 1000/population (Thapa & Shrestha, 2017). Lack of adequate infrastructure and overcrowded and understaffed hospitals can lead to significant delays in health service delivery and frustration among the patients, which can sometimes erupt into violence (Maharjan, 2024). Skilled manpower emigration has resulted in shortages of health staff, loss of intellectual capital, public investment, and economic development (Sapkota et al., 2014). The Nepal Government is incurring significant costs for investing in medical education as many graduates from subsidised schemes fly abroad (Raj & Hiwatari, 2013). As we are going through changing disease patterns globally, there has been a pronounced impact on Nepal's healthcare system, as there is already gross mismanagement (Shakya, 2022). In the South Asia Region, although the production of doctors is in excess, the health scenario remains inadequate, as rural and underprivileged areas of the country continue to be deprived of health services (Adkoli, 2006). Government bonding schemes restrict doctors' freedom and limit their opportunities to have a better life and work abroad (Gowda et al., 2022).

3.4. Solutions of brain drain among health professionals

Preference for postgraduation for work service in rural areas with incentives is increasing the accessibility of health services in rural places (Shakya, 2022). A safe working environment, career-boosting facilities, and good salaries could be important factors in controlling the emigration of nurses in Nepal (Kadel & Bhandari, 2018). Additional factors such as medical insurance, paid leave, and academic and career mentoring schemes could encourage medical graduates to stay (Gowda et al., 2022). The doctors produced by old-fashioned state-funded medical institutions in Nepal, with bad socio-economic and political factors, are ideal for serving first-world countries (Pokhrel, 2017). Unless the issues of finances, career development, and management are addressed, quality nursing care cannot be delivered (Thapa & Shrestha, 2017). Since low and middle-income nations could not solve these issues themselves. This issue should be recognised by high-income countries and international agencies like the World Bank and the International Monetary Fund (IMF) to halt the process of migration of health workers (Lofters, 2012). Immediate studies should be conducted to determine the emigration pattern and magnitude to address retention problems (Sapkota et al., 2014). Nepal should initiate bilateral negotiations based on the 'International Code of Practices of Recruiting Doctors' with the UK and the USA to counteract the loss. The medical college could utilise the training of emigrants abroad and retain the doctors by appointing them as honorary trainers and arranging visiting scholar positions (Raj & Nobuhiro, 2013). A small wage increment could not narrow the gap because of the enormous salary difference between the recipient and source nations; however, focusing more on improving the working and living conditions effectively controls emigration (Nair & Webster, 2013). A safe working hospital environment with security is the basic factor for successfully delivering health services in any country (Kabbash et al., 2021).

Table 1: Literature exploring causes, consequences, and potential solutions related to the brain drain

Causes	**Consequences**	**Solutions**
- Underfunded health systems and poor medical supplies and equipment (Sapkota et al., 2014).	- Talent retention in high-income countries causes a shortage in low-income countries (El Saghir et al., 2020).	- Enhancing living conditions, infrastructure, research capacity, and educational opportunities (El Saghir et al., 2020).
- Poor physical infrastructure and lack of incentives and training opportunities (Sapkota et al., 2014).	- Overburdened health systems in low-income countries due to political, social, and economic instability (Frenk et al., 2022).	- Conducting research to assess medical workers' brain drain and address root causes (El Saghir et al., 2020).
- Discriminatory work atmosphere and high unemployment rate in the health sector (Misau et al., 2010).	- Increased frequency of attacks on healthcare providers (Singh, 2023).	- Developing policies to promote the welfare of medical professionals and create a long-term healthcare system (El Saghir et al., 2020).
- Better professional training, higher salaries, and better lifestyles abroad (Adkoli, 2006).	- Global physician shortfall, particularly in low-income countries (Saluja et al., 2020).	- Establishing mutually advantageous interactions with the diaspora for skill transfer (Mahindra & Dangi, 2014).
- Political instability and lack of job opportunities in Nepal (Thapa & Shrestha, 2017).	- Adverse economic effects and increased mortality linked to physician shortages in low-income countries (Saluja et al., 2020).	- Implementing managed migration, bilateral initiatives, and long-term policies to minimize negative effects (Toya et.al., 2014).
- Hectic, overcrowded workplaces and exposure to traumatic situations (Adriaenssens et al., 2015).	- Challenges in achieving Sustainable Development Goals for Health (Adovor et al., 2021).	- Improving workplace conditions, salaries, and career advancement opportunities (Kadel & Bhandari, 2019).
- Poor work-life balance and low	- Negative impact on higher education	- Addressing security and

motivation among health professionals (Bodendieck et al., 2022).	and the economy of the origin countries (Mainali, 2019).	compensation issues to retain health professionals (Toyin-Thomas P et al., 2023).
- Government inaction on improving health care services and career advancements (Adjei-Mensah, 2023).	- Mismanagement and inadequate health service delivery in Nepal (Shakya, 2022).	- Enhancing job satisfaction and career prospects for health workers (Toyin-Thomas P et al., 2023).
- Influence of family, friends, and personal ambitions (Thapa & Shrestha, 2017).	- Financial loss for the Nepal Government due to subsidised education graduates moving abroad (Phuyel & Hiwatari, 2013).	
- Poor economy and political unpredictability in developing countries (Okeke, 2013).		
- Low pay and lack of professional advancement opportunities (Kadel & Bhandari, 2019).		

4. Conclusion

It was found that the migration of health professionals from Nepal to other countries has been driven by various push and pull factors, including better opportunities, higher salaries, and improved working conditions abroad. The impact of brain drain on Nepal's healthcare system has resulted in a shortage of skilled health workers, leading to challenges in delivering quality healthcare services. The unequal distribution of health workers and the loss of intellectual capital have further improved the situation. The movement of highly skilled healthcare professionals from developing to industrialised nations has undeniable implications for both the countries of origin and the destination countries. It was found that while brain drain may lead to a loss of technical and intellectual workers, it also has the potential to benefit the country of origin through remittances and cost savings. Additionally, the mismatch between the supply and demand in the education sector in developing nations has been identified as a contributing factor to brain drain. To address the issue, it is crucial to implement policies that improve working conditions, offer career advancement opportunities, and provide incentives for health professionals to stay in Nepal. Additionally, bilateral negotiations with recipient countries and international agencies may help mitigate the emigration of health workers. It is essential to conduct further research to understand emigration patterns and develop strategies for retention. Ultimately, addressing the root causes of brain drain and promoting the welfare of healthcare professionals are critical for achieving sustainable economic development and ensuring high-quality healthcare for all Nepalese citizens.

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